CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 09/27/2021 – updated 11/02/2021 to include updated permit application data

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for the WI DNR Peninsula State Park WPDES Permit No. WI-0029343-10

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the WI DNR Peninsula State Park in Door County. This municipal wastewater treatment facility (WWTF) discharges to the Tennison Bay Marsh, located in the Door Peninsula Watershed in the Upper Door County Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1,2
BOD_5			30 mg/L	20 mg/L		1
TSS			30 mg/L	20 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1
Ammonia Nitrogen						2
Phosphorus						2
Chloride						1,2
TKN, Nitrate+Nitrite, and Total Nitrogen						3

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen (total kjeldahl nitrogen and nitrate/nitrite) monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (all expressed as N).

No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are not required due to the non-continuous nature of the discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & Outfall Map

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Dave Haas, Wastewater Engineer – NER
Heidi Schmitt Marquez, Regional Wastewater Supervisor – NER
Diane Figiel, Water Resources Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
WI DNR Peninsula State Park

WPDES Permit No. WI-0029343-10

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The WI DNR Peninsula State Park's treatment facility is a recirculating sand filter. The treatment facility contains two septic tanks, a dosing chamber, one splitter box, and three sand filters.

Disinfection of the effluent is not required based on the conditions of s. NR 210.06(3), Wis. Adm. Code. It should be noted that recreational use surveys may be re-evaluated in the future to ensure the conditions are being met. This re-evaluation could result in requiring disinfection of the effluent at that time.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, expiring on 12/31/2021, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
BOD_5			30 mg/L	20 mg/L	2
TSS			30 mg/L	20 mg/L	2
pH	9.0 s.u.	6.0 s.u.			2
Dissolved Oxygen		4.0 mg/L			2
Chloride					1

Footnotes:

1. Monitoring only
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

Receiving Water Information

- Name: Tennison Bay Marsh in Peninsula State Park
- Waterbody Identification Code (WBIC): 3000250
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Limited aquatic life, non-public water supply which is codified in NR 104, Wis. Adm. Code. (Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.). The marsh does not channelize to reach downstream waters.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are estimated and used in this analysis at Outfall 001 due to the non-channelized nature of the wetland.

7-Q_{10} = 0 cfs (cubic feet per second)
7-Q_2 = 0 cfs

- Hardness = 669 mg/L as $CaCO_3$. This value represents the geometric mean of data from 06/29/2021 to 07/19/2021. Effluent hardness is used in place of receiving water because there is no receiving water flow upstream of the discharge.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.
- Source of background concentration data: Background concentrations are not included because they don't impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None
- Impaired water status: The marsh is not 303(d) listed as impaired.

Effluent Information

- Design flow rate(s):
  Annual average = 0.05 MGD (Million Gallons per Day)
  For reference, the actual average flow from 07/01/2016 to 06/30/2021 was 0.0165 MGD during the summer months when the facility is discharging.
- Hardness = 669 mg/L as $CaCO_3$. This value represents the geometric mean of data from 06/29/2021 to 07/19/2021.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Domestic wastewater with water supply from wells
- Additives: None.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code.

Effluent Data

Sample Date	Chloride mg/L	Sample Date	Chloride mg/L	Sample Date	Chloride mg/L
07/18/2019	75.6	09/23/2019	72.1	08/10/2020	85.0
07/25/2019	77.9	10/07/2019	74.0	09/03/2020	103
08/21/2019	90.0	11/04/2019	53.2	10/01/2020	126
09/09/2019	99.6	06/18/2020	54.8	11/09/2020	111
1-day P_{99} = 149 mg/L					
4-day P_{99} = 114 mg/L					
Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
6/29/2021	7.83	7/26/2021	9.8	8/23/2021	8.3
7/8/2021	8.73	8/2/2021	7.53	8/31/2021	9.19
7/12/2021	9.92	8/9/2021	8.7	9/7/2021	9.13
7/19/2021	8.82	8/16/2021	13.4		
1-day P_{99} = 13.5 µg/L					
4-day P_{99} = 11.2 µg/L					

The following table presents the average concentrations and loadings at Outfall 001 from 07/01/2016 to 06/31/2021 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Attachment #1

Parameter Averages with Limits

	Average Measurement
BOD_5	8.25 mg/L*
TSS	6.64 mg/L*
pH field	6.6 s.u.
Dissolved oxygen	7.68 mg/L

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Adm. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC =Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10}) if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Peninsula State Park.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340	340	68.0	<7		
Cadmium	457	165	165	33.0	<0.5		
Chromium	301	4446	4446	889	<2		
Copper	495	70.2	70.2			23	19
Lead	356	365	365	72.9	6.02		
Nickel	268	1080	1080	216	5.41		
Zinc	333	345	345	68.9	54.9		
Chloride (mg/L)		757	757			149	126

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q_{10} flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	CTC	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Arsenic		152	152	30.4	<7	
Cadmium	175	3.82	3.82	0.8	<0.5	
Chromium	301	326	326	65.2	<2	
Copper	495	40.7	40.7			17
Lead	356	95.5	95.5	19.1	6.02	
Nickel	268	169	169	33.8	5.41	
Zinc	333	345	345	68.9	54.9	
Chloride (mg/L)		395	395			114

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

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Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	1120	1120	224.0	<0.5
Chromium (+3)	880	880	176.0	<2
Lead	8400000	8400000	1680000	6.02
Nickel	2240	2240	448.0	5.41

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	40	40	8.0	<7

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for no toxic substances in this section.

Chloride – Considering available effluent data from the current permit term (07/01/2016 to 06/30/2021), the 1-day P_{99} chloride concentration is 149 mg/L, and the 4-day P_{99} of effluent data is 114 mg/L.

These effluent concentrations are below the calculated WQBELs for chloride; therefore, no effluent limits are needed. Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

Mercury – The permit application did not require monitoring for mercury because Peninsula State Park is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, "there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5)." However, sludge sampling is not available because Peninsula State Park is a recirculating sand filter and generates solids which are hauled away as septage. It is not expected that there are exceedances of the high-quality mercury concentration based on similar municipal treatment plants and the lack of industries. **No monitoring is recommended.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Peninsula State Park does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation:

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - pH)})] + [B \div (1 + 10^{(pH - 7.204)})]$$

Where:

A = 0.633 and B = 90.0 for Limited Aquatic Life, and
pH (s.u.) = that characteristic of the effluent

The effluent pH data was examined as part of this evaluation. A total of 232 sample results were reported from 07/01/2016 to 06/31/2021. The maximum reported value was 7.1 s.u. (Standard pH Units). The effluent pH was 7.1 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.1 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.1 s.u. Therefore, a value of 7.1 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.1 s.u. into the equation above yields an ATC = 50.6 mg/L.

Potential Changes to Daily Maximum Ammonia Nitrogen Effluent Limitations

Subchapter IV of ch. NR 106, Wis. Adm. Code (effective September 1, 2016) specifies methods for the use of the 1-Q_{10} receiving water low flow to calculate daily maximum ammonia nitrogen limits if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	101
1-Q_{10}	50.6

The 1-Q_{10} method yields the most stringent limits for Peninsula State Park.

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

Weekly and monthly average limits based on chronic toxicity criteria for ammonia are also calculated to determine the weekly and monthly average limits to meet the requirements of s. NR 106.07(3), Wis. Adm. Code.

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as Limited Aquatic Life is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

$$CTC = E \times \{[0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})]\} \times C$$

Where:

pH = the pH (s.u.) of the receiving water,

E = 1.0,

$C = 8.09 \times 10^{(0.028 \times (25 - T))}$

T = the temperature of the receiving (ºC)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q_{10} (4-Q_3, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q_5 (estimated as 85% of the 7-Q_2 if the 30-Q_5 is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 ºC, 25% of the flow is used if the Temperature < 11 ºC, and 50% of the flow is used if the Temperature ≥ 11 ºC but < 16 ºC.

The "default" basin assumed values are used for Temperature, pH and background ammonia concentrations, because minimum ambient data is available. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – LAL

		Spring	Summer	Winter
		April & May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	0.0165	0.0165	0.0165
Background Information	7-Q_{10} (cfs)	0	0	0
	7-Q_2 (cfs)	0	0	0
	Ammonia (mg/L)	0.04	0.05	0.105
	Average Temperature (°C)	12	19	4
	Maximum Temperature (°C)	14	21	10
	pH (s.u.)	8.06	8.08	7.99
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0	0	0
	Reference Monthly Flow (cfs)	0	0	0
Criteria mg/L	4-day Chronic	36.6	23.9	54.0
	30-day Chronic	14.6	9.57	21.6
Effluent Limits mg/L	Weekly Average	36.6	23.9	54.0
	Monthly Average	14.6	9.57	21.6

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 06/28/2012 to 07/22/2021 with those results being compared to the calculated limits to determine the need to include ammonia limits in Peninsula State Park's permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P_{99}) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Attachment #1

	Ammonia Nitrogen mg/L
1-day P_{99}	30.1
4-day P_{99}	16.3
30-day P_{99}	8.45
Mean	5.23
Std	6.27
Sample size	36
Range	0.0554 – 18

Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits.

No limits are needed; however, monitoring is recommended.

PART 4 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Peninsula State Park does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance to s. NR 217.04(1)(a)1, Wis. Adm. Code, and therefore no technology-based limit is required.

Annual Average Mass Total Phosphorus Loading

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
June 2021	7.44	0.514	31.9
July 2021	10.2	0.589	50.1
Aug 2021	11.5	0.535	51.3
Sept 2021	13.6	0.234	26.5
Average			**40.0**

Total P (lbs/month) =
Monthly average (mg/L) × annual average design flow (MGD) × 8.34 (lbs/gallon) × 30 (day/month)

In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL)
Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Phosphorus criteria in s. NR 102.06, Wis. Adm. Code, do not apply to limited aquatic life waters as

described in s. NR 102.06(6)(d), Wis. Adm. Code. These waters were not included in the USGS/WDNR stream and river studies and, therefore, the Department lacked the technical basis to determine and propose applicable criteria. At some time in the future, the Department may adopt phosphorus criteria based on new studies focusing on limited aquatic life waters. The Guidance for Implementing Wisconsin's Phosphorus Water Quality Standards for Point Source Discharges (2020) suggests that during the interim, WQBELs should be based on the criteria and flow conditions for the next stream segment downstream (or downstream lake or reservoir, if appropriate), because ss. 217.12 and 217.13, Wis. Adm. Code, state that the Department must set WQBELs to protect downstream waters. The discharge location of the wastewater to Tennison Bay Marsh from Peninsula State Park is classified as limited aquatic life. This wetland is diffuse so does not channelize to Lake Michigan, therefore limits based on criteria for Lake Michigan are not recommended.

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from 06/24/2021 to 09/16/2021.

Total Phosphorus Effluent Data

Sample Date	Phosphorus mg/L	Sample Date	Phosphorus mg/L	Sample Date	Phosphorus mg/L
6/24/2021	7.44	7/29/2021	10.7	8/26/2021	12.4
7/6/2021	9.44	8/5/2021	10.2	9/2/2021	12.8
7/15/2021	10.1	8/12/2021	11.8	9/9/2021	12.8
7/22/2021	10.5	8/19/2021	11.6	9/16/2021	15.2
1-day P_{99} = 16.6 mg/L					
4-day P_{99} = 13.7 mg/L					
30-day P_{99} = 12.1 mg/L					
Average = 11.3 mg/L					

It is recommended that phosphorus be monitored in the reissued permit to determine if limits are needed at the next reissuance.

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. The daily maximum effluent temperature limitation shall be 86 ° F for discharges to surface waters classified as Limited Aquatic Life according to s. NR 104.02(3)(b)1, Wis. Adm. Code, except for those classified as wastewater effluent channels and wetlands regulated under ch. NR 103 and described in s. NR 106.55(2), Wis. Adm. Code which has a daily maximum effluent temperature limitation of 120° F. The 120° F limit applies because the hydrologic classification is listed as a wetland in ch. NR 104.

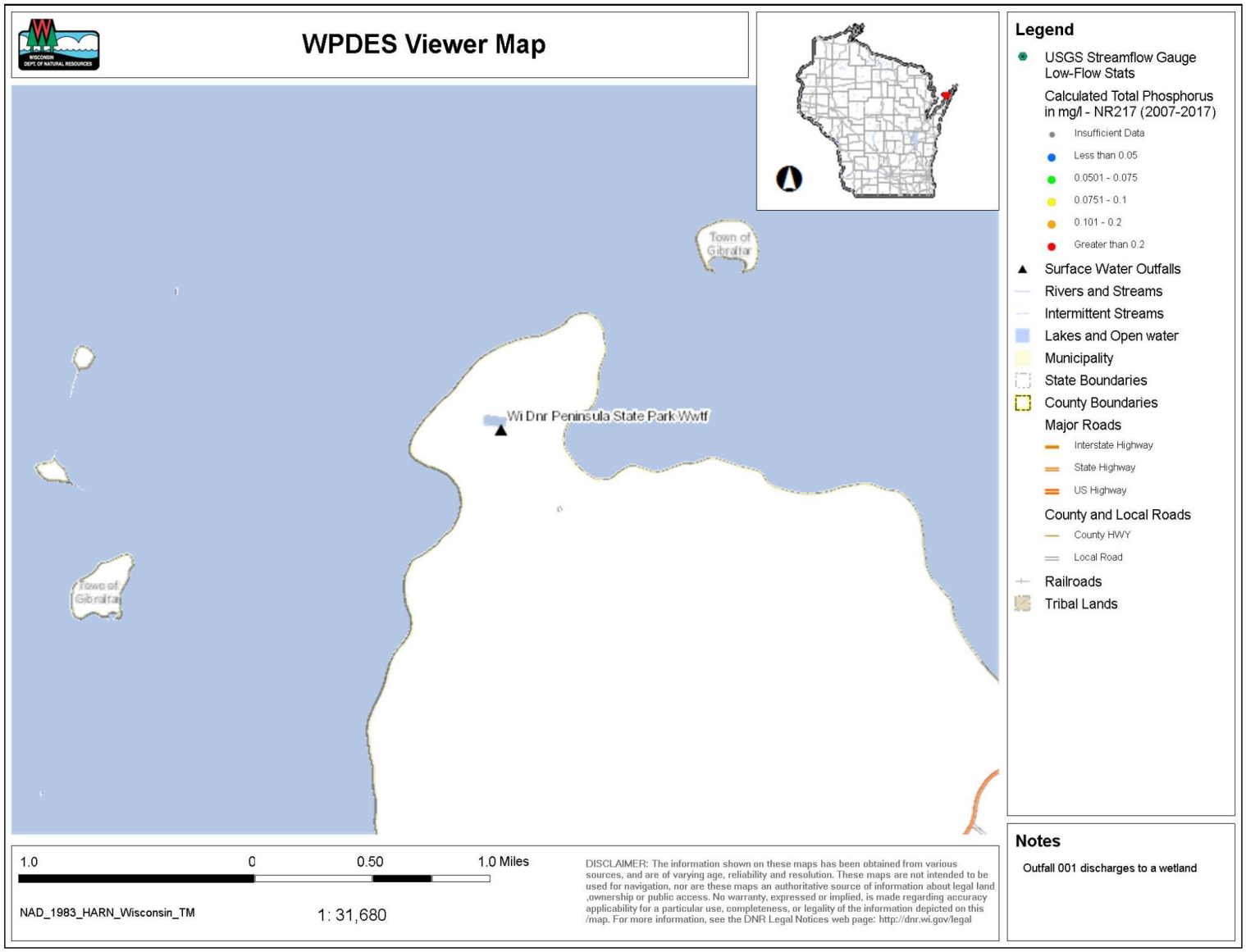
At temperatures above approximately 103° F, conventional biological treatment systems do not function properly and experience upsets. There is no indication that this has ever occurred in this treatment system. Therefore, there is no reasonable potential for the discharge to exceed this limit. No monitoring or effluent limits are recommended for temperature.

Attachment #1

PART 6 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Codes. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (October 29, 2019).*

Guidance in Chapter 1.11 of the WET Guidance Document (WET Testing of Minor Municipal Discharges) was consulted. This is a minor municipal discharge (< 1.0 MGD) comprised solely of domestic wastewater, with no history of WET failures and no toxic compounds detected at levels of concern. No WET testing is recommended at this time because of the low risk in effluent toxicity.


WPDES Viewer Map
Town of Gibraltar
Wi Dnr Peninsula State Park Wwtf
Town of Gibraltar
Legend
USGS Streamflow Gauge Low-Flow Stats
Calculated Total Phosphorus in mg/l - NR217 (2007-2017)
Insufficient Data
Less than 0.05
0.0501 - 0.075
0.0751 - 0.1
0.101 - 0.2
Greater than 0.2
Surface Water Outfalls
Rivers and Streams
Intermittent Streams
Lakes and Open water
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
Railroads
Tribal Lands
Notes
Outfall 001 discharges to a wetland
1.0
0
0.50
1.0 Miles
NAD_1983_HARN_Wisconsin_TM
1: 31,680
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